

ABSTRACT

An optical sensor circuit for generating signals corresponding to received photoelectrons is formed on a single monolithic substrate and includes a charge coupled device (CCD) array. The array is formed of a plurality of pixels constructed by a standard CMOS process. Each pixel is formed of at least one charge well of minority carriers and a gate oxide layer overlaying the at least one charge well. At least two spaced gate electrodes corresponding in position to the at least two charge wells overlays the gate oxide layer. The space between adjacent electrodes defines a gap to transfer charge between adjacent ones of the at least two spaced gate electrodes and the gap is stabilized. A back-illuminated imager is also described in which photocarriers are diverted from devices integrated with the pixel by a PN junction formed in the pixel structure.

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